

J. LANZ.
STRUCTURAL COLUMN.
(Application filed June 6, 1899.)

(No Model.)

4 Sheets—Sheet 1.

Fig. 1.

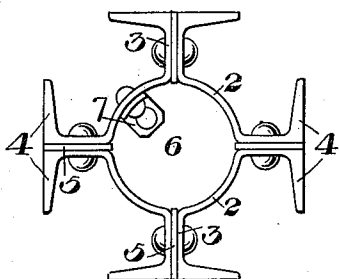


Fig. 3.

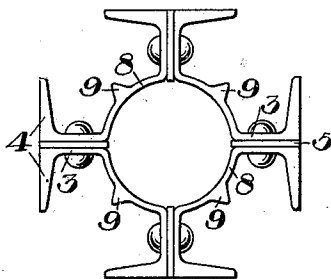
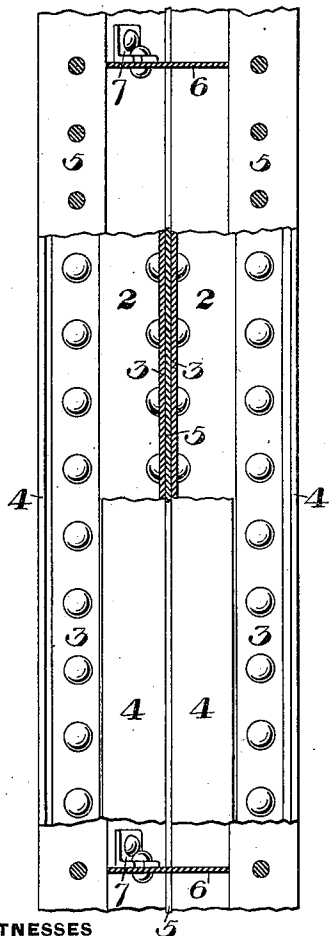


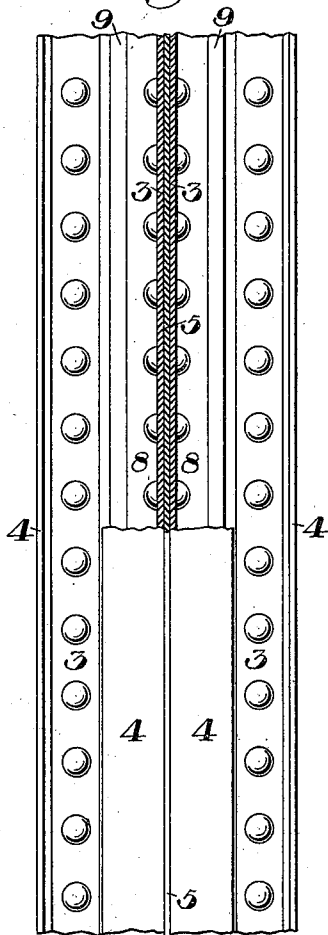
Fig. 2.



WITNESSES

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Fig. 4.



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No. 651,367.

Patented June 12, 1900.

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Fig. 5.

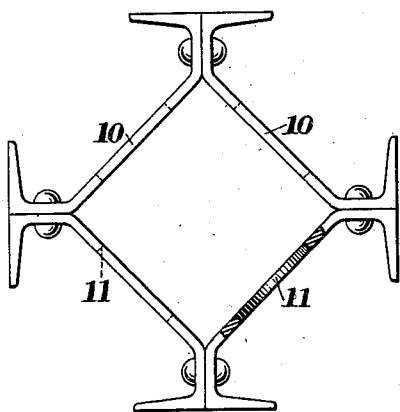


Fig. 6.

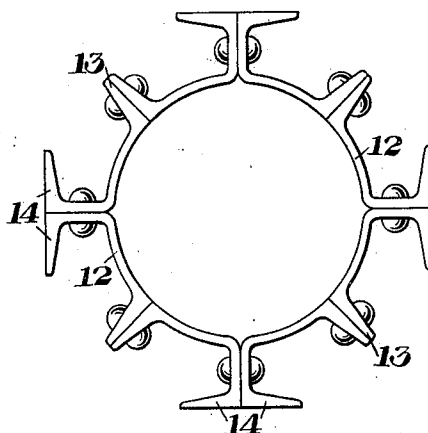


Fig. 7.

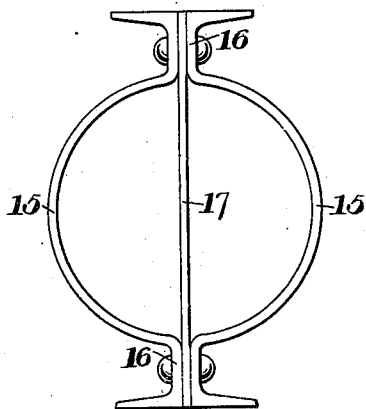


Fig. 8.

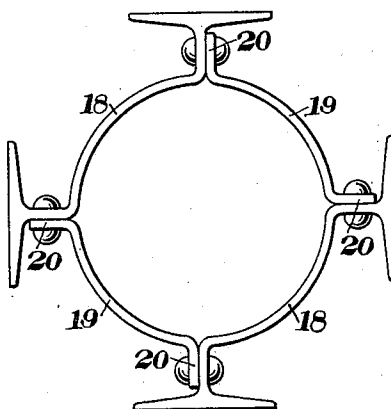
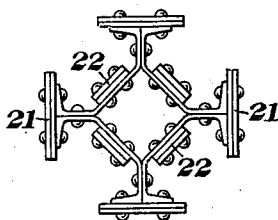


Fig. 9.



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Fig. 10.

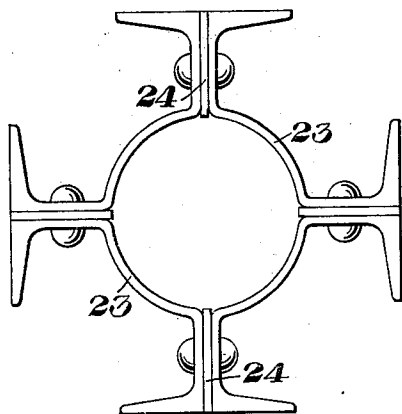


Fig. 11.

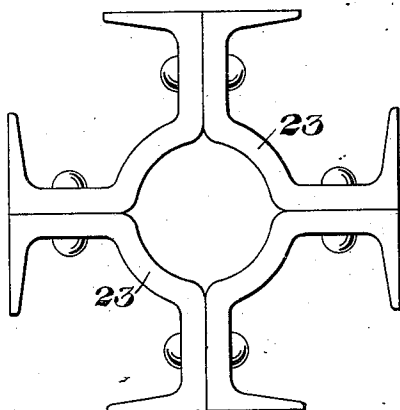
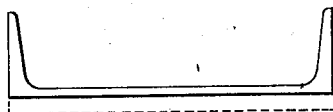


Fig. 12.



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Patented June 12, 1900.

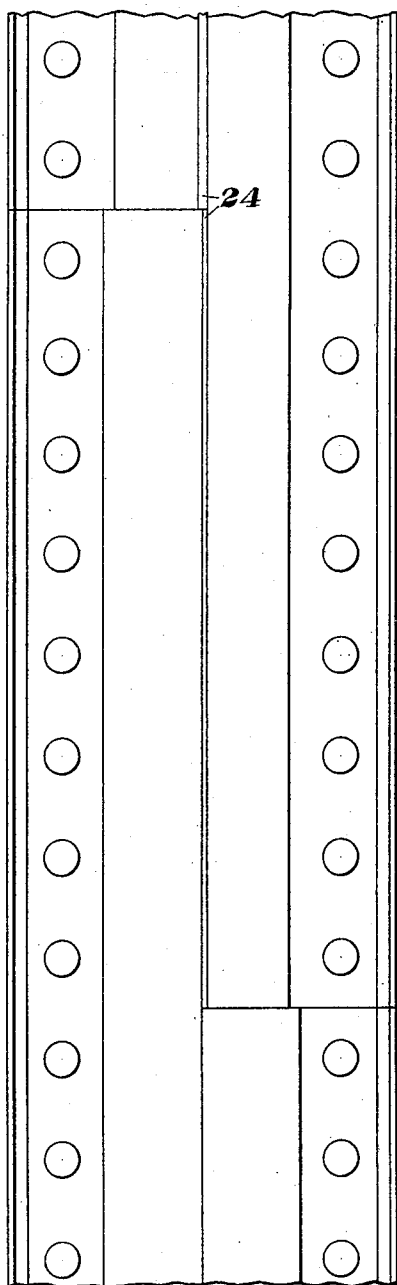
J. LANZ.
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4 Sheets—Sheet 4.

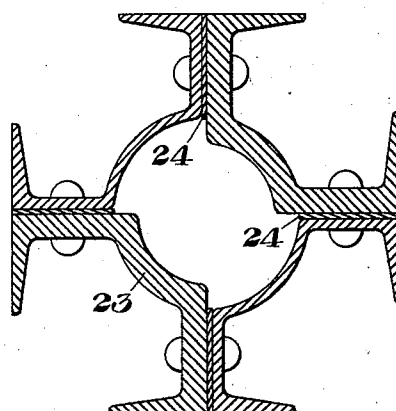
Fig. 13.



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Fig. 14.



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UNITED STATES PATENT OFFICE.

JOHN LANZ, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO MARY C. LANZ,
OF SAME PLACE.

STRUCTURAL COLUMN.

SPECIFICATION forming part of Letters Patent No. 651,367, dated June 12, 1900.

Application filed June 6, 1899. Serial No. 719,543. (No model.)

To all whom it may concern:

Be it known that I, JOHN LANZ, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Structural Columns, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an end elevation of one form of column constructed in accordance with my invention. Fig. 2 is a side elevation of the same, partly broken away. Figs. 3 and 4 are views similar to Figs. 1 and 2, respectively, of another form of my improved column. Figs. 5, 6, 7, 8, and 9 are end elevations showing further modified forms of my improved column. Figs. 10 and 11 are end elevations showing the successive sections of a column for buildings constructed in accordance with my invention, and Fig. 12 is a cross-section of a channel-section I employ. Fig. 13 is a side elevation showing the joint between successive sections of the column built up of the shape shown in Figs. 10 and 11, and Fig. 14 is a cross-section of such joint.

My invention relates to built-up columns, and is designed to provide a hollow column formed of rolled and bent shapes in which all of their parts shall contribute to the strut action, so as to assist in carrying the strain, and, further, to provide a hollow column of this form provided with external symmetrical flanges forming T-shaped heads around the column.

In the drawings, referring to the form of Figs. 1 and 2, the unit of this column consists of a channeled shape having an intermediate portion 2 of the web bent or bowed outwardly, forming corners at the edges of the bent portions, the outer portions 3 of the web extending out on a radius of the circle on which the intermediate part of the web is bent. The flanges 4 extend at an angle to the parts 3, and in the form shown the one flange of each unit extends at a right angle to the other, four of these units being riveted together with filler-strips 5 between the portions 3 to give greater strength and weight. The units are riveted or bolted together, and

to stiffen the column against collapsing I preferably provide stiffening-plates 6, which fit neatly within the hollow column and are held in place by suitable means, such as angles 7, which are secured to the parts 2 of the column and may be located at any desired intervals in its length.

In the form of Figs. 3 and 4 I show a column similar to that of Figs. 1 and 2, except that the intermediate part 8 of each channel is provided with an outwardly-projecting strengthening-rib 9. As these intermediate curved portions of the web assist in carrying the strain, the ribs rolled thereon will increase the carrying capacity.

In the form of Fig. 5 the intermediate part 10 of the channel-web is straight and is provided with hand-holes 11, through which its interior may be reached for painting or applying other protective coatings. These holes may be provided in each unit and spaced at suitable intervals apart.

In the form of Fig. 6 the column is composed of eight channeled shapes in which the intermediate outwardly-curved portion 12 is at one side of the channel instead of intermediate of the web. This brings two of the end flanges 13 together on a radial line, while the other flanges 14 form the T-head, as in the previous forms of the invention.

In the form of Fig. 7 I employ only two channels, the intermediate portions 15 of the web of each channel being bent in a semicylindrical form, while the flanges 16 form the T-heads, as before, upon opposite sides of the column. With this form I preferably employ a transverse filler-plate 17, which is riveted between the end portions of the webs and extends centrally through the hollow body of the column. The filler prevents collapsing under any lateral strain, and this form is also capable of use for beams as well as columns.

In the form of Fig. 8 I employ two channels 18, having double flanges at each end, forming an integral T-head, and two plates 19, the intermediate parts of which are curved, while the end portions 20 are riveted through the outer web portions of the channels.

In the form of Fig. 9 I show a column similar to that of Fig. 5, except that strengthen-

ing-plates 21 are riveted to the T-heads and other strengthening-plates 22 are riveted to the intermediate portions of the webs. Either of these sets of plates may be employed without the others.

In Figs. 10 and 11 I show successive sections of a column for buildings. This column is similar to the form of Fig. 1; but in the successive sections for each story of the building the column is made successively lighter from the lower section upwardly. Thus in Fig. 11 I show the webs 23 of the channels as of considerable thickness and weight, this being a cross-section of one of the lower sections, while in Fig. 10 I show one of the upper sections of the same column in which the web is thinner. It will be noted that the external dimensions of the successive sections are the same, while their weight and strength are changed. The hollow portions of the sections are of successively-greater diameter in the upper sections, and filler-plates 24 are placed between the outer portions of the webs to make the external dimensions the same as those of the lower sections. At the joint between the successive sections, two of the channels of each section may be cut shorter than the others and a scarf-joint thus formed, as shown in Figs. 13 and 14. In Fig. 12 I show the channel I may employ, the dotted lines indicating the different thicknesses of the webs in the successive sections of the column.

The advantages of my invention result from the distributing of the material in such a way that it all acts as strut material and not merely as connections between parts of the column, as in many prior constructions. The outward curving or bending of the channel-webs is important on this account. The flanges forming the T-heads strengthen the column and give it stability and also provide means for the easy attachment of other parts. The column lends itself readily to use in buildings where the successive sections are varied in weight without changing their external shape or size, the same size being retained either by changing the diameter of the circle upon which the webs are bent or changing the size of the filler-strips between the end portions of the webs, or by both.

Many changes may be made in the size, shape, and arrangement of the parts without departing from my invention, since

I claim—

1. A column composed at least in part of channeled shapes provided with flanges, at least a part of which flanges form T-heads, each of said channels having a corner in its

web portion at one side of the center; substantially as described.

2. A column, composed at least in part of a channeled shape provided with flanges and having at least a portion of the web bent or curved outwardly the flanges forming T-heads around the column; substantially as described.

3. A built-up column composed of channeled and flanged shapes, a portion of the web of each shape being curved outwardly, and their flanges forming T-heads external to the hollow portion of the column; substantially as described.

4. A hollow column composed of channeled shapes having flanges, the intermediate portions of the webs being outwardly curved, and certain of the side portions of the webs being riveted together, the flanges forming T-heads surrounding the hollow center of the column; substantially as described.

5. A hollow column composed of successive sections, each formed at least in part of flanged channeled shapes, the webs of the successive sections being of different thicknesses; substantially as described.

6. A hollow column composed of sections, each formed at least in part, of a channeled shape provided with flanges, and having a portion of the web curved outwardly, the webs of the successive sections being of different degrees of curvature; substantially as described.

7. A hollow column composed of sections, each formed in part of channeled shapes provided with flanges, forming outer T-heads, the webs of the channels having bent intermediate portions, and the interior of the successive sections having different cross-sectional areas; substantially as described.

8. A hollow column composed of flanged channeled shapes, having their webs provided with bent intermediate portions, joined to the outer ends of the web by corners, the outer web portions being joined together; substantially as described.

9. A built-up column composed of channeled and flanged shapes, each having two bent corners outside of the center of its webs and their flanges forming T-heads external to the hollow portion of the column; substantially as described.

In testimony whereof I have hereunto set my hand.

JOHN LANZ.

Witnesses:

G. B. BLEMMING,
M. S. MURPHY.